

REMARKS

Status of the claims

Claims 1, 23-28, 30-48 and 52-57 were pending as shown above and claims 25-28, 30-32, 36, 37, 39-41 and 53-57 were appealed. By amendment herein, claim 30 has been amended to specify that when there are 3 amino acid residues between the carboxy-terminal zinc coordinating residues at least one of these 3 residues is altered as compared to a naturally occurring zinc finger with 3 residues in this region. *See, Table 1*, showing alteration of one or more residues of the 3 residues in this region as compared to a naturally occurring finger. New claims 62, 63 and 64 have been added and find support, for example on page paragraphs [0024], [0025], and [0157] (Example 4B) (claim 62) and page 4, lines 6 (claims 63 and 64). Thus, claims 1, 23-28, 30-48, 52-57 and 62-64 are pending and claims 25-28, 30-32, 36, 37, 39-41, 53-57 and 62-64 are under active examination.

Applicants again note that upon indication that elected claim 30 is allowable, the withdrawn claims should be examined.

35 U.S.C. § 103

Barbas

The rejection of claim 25-28, 30-32, 36-37, 39-41 and 53-57 under 35 U.S.C. § 103(a) as allegedly unpatentable over U.S. Patent No. 7,151,201 (hereinafter “Barbas ‘201”) or U.S. Patent No. 7,329,729 (hereinafter “Barbas ‘728”) in view of Filippova (1996) *Mol. Cell Biol.* 16(6):2802-2813 (hereinafter “Filippova”) was affirmed on the grounds that it would have been obvious to alter the recognition helix of Filippova’s non-canonical zinc finger as described by Barbas. (Decision on Appeal, pages 3-14).

The Board’s Decision was premised on the previous claims, namely claims the Board determined encompassed the “framework” of Filippova’s non-canonical CTCF finger. Thus, by specifying a framework not disclosed by Filippova, the foregoing amendments obviate the rejections.

In particular, Barbas fails entirely to teach anything about modifying a zinc finger protein outside the 7 amino acid recognition helix region. Indeed, Barbas explicitly

teaches that only 7 or 8 amino acid recognition helix region of the zinc finger “framework” are modified to alter DNA binding specificity (Barbas ‘201, Example 4; Barbas ‘728 col. 42, lines 19-24, emphasis added):

Since the specificity of the ZFP is determined by the DNA binding alpha helix, polydactyl zinc finger proteins with novel DNA specificity can be constructed by modifying the recognition helices of existing zinc finger proteins. A human zinc finger protein Sp1C has been selected to serve as a framework in the present example. It has been demonstrated that the Sp1C protein can provide a good framework for zinc finger domain modification

The framework residues play a role in affinity and specificity. Thus, amino acid positions –2 to 6 of the DNA recognition helices are either grafted into a Zif268 (Pavletich et al. (1991) Science 252:809-817) or an Sp1C framework (Desjarlais et al. (1993) Proc. Natl. Acad. Sci. U.S.A. 90:2256-2260).

Thus, there is nothing in either of the Barbas patents about modifying the zinc finger outside the recognition helix region (*i.e.*, the framework). Indeed, Barbas clearly teaches away from modifying residues outside the recognition helix region as it teaches that such modifications may impact binding.

Furthermore, Filippova is silent as to any modification of their zinc finger. Thus, combining Filippova’s “framework” of CSKCGKTRRNTMARHADNC with Barbas’s non-naturally occurring recognition helix region cannot result in the claimed subject matter, which requires, when there are 3 amino acid residues between the carboxy-terminal zinc coordinating residues (as in Filippova), that at least one of those residues is altered as compared to a naturally occurring zinc finger. *See, e.g.*, Table 1 in which ITK of the naturally occurring canonical zinc finger is altered to IKG or IGG. Therefore, the rejections cannot be sustained.

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CONCLUSION

In light of the amendments and remarks presented herein, it is believed that the elected subject matter is in condition for allowance. Applicants therefore request examination of generic subject matter. If the Examiner believes that a telephone conversation would expedite prosecution, she is invited to contact the undersigned at the telephone number given below.

Respectfully submitted,

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